

**STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD**

**INFORMATIONAL PROCEEDING TO DEVELOP FLOW CRITERIA FOR THE
DELTA ECOSYSTEM NECESSARY TO PROTECT PUBLIC TRUST
RESOURCES**

**CLOSING COMMENTS OF
AMERICAN RIVERS AND NATURAL HERITAGE INSTITUTE**

American Rivers, Inc. and Natural Heritage Institute hereby submit closing comments in this proceeding. We frame these comments as proposed findings and conclusions, flow criteria, and plan for implementation, for the State Water Board's consideration as it prepares its report.

[PROPOSED] FINDINGS AND CONCLUSIONS

1. The Delta Reform Act of 2009 provides that the State Water Board "...shall, pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources."¹ Such criteria "...shall include the volume, quality, and timing of flow necessary for the Delta ecosystem under different conditions."² The criteria shall be for "...the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan."³
2. This proceeding is "informational."⁴ The State Water Board will not issue, amend, or deny any water right or other permit.⁵ Specifically, the consideration of the public interest in water supply, as described in paragraphs 3, 4, and 16, will occur in subsequent proceedings.
3. Under the public trust doctrine as stated in *National Audubon Society v. Superior Court of Alpine County* (1983), the State Water Board must "...preserve, so far as consistent with the public interest, the uses protected by the trust."⁶ This duty of "continuing supervision" applies to navigable waters, their submerged lands, and non-navigable tributaries insofar as activities there affect trust uses.⁷ Such uses include: navigation, commerce, fishing, and "preservation ... [to] serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area."⁸
4. The public trust doctrine and the Water Code are "an integrated system of water law."⁹ A diversion may cause "foreseeable harm to public trust uses" so as to

***AR and NHI Closing Comments
SWRCB, Delta Flow Criteria***

provide water supply which is a “practical necessity” for the “population and economy of the state.”¹⁰ The State Water Board must reach an “accommodation” between the public trust uses and the public interest in necessary water supply.¹¹ Specifically, the State Water Board must prevent “unnecessary and unjustified harm to trust interests.”¹² Thus, these criteria are the first step towards achieving such accommodation in water right and other permit decisions in subsequent proceedings, and specifically, preventing (or correcting) unnecessary harm to Delta trust uses.

5. Anadromous and pelagic fishes which use the Delta as habitat have declined very substantially from historical conditions.¹³ Most are not in good condition.¹⁴ Some are at risk of extirpation from the Delta and its tributaries.¹⁵ Their future condition will probably decline further, absent significant changes in the physical conditions in the Delta that today are stressors for their populations and habitats.¹⁶

6. The criteria describe flows and other measures to restore Delta fish to good condition. Under Fish and Game Code section 5937, predecessor statutes dating back almost to Statehood,¹⁷ as well as the Water Code,¹⁸ a diversion must release sufficient flow to maintain fish in “good condition,”¹⁹ where the term “fish” includes the individual animals and “any part, spawn or ova thereof...”²⁰ Further, historical condition of a fishery is relevant to determining what level of protection is good condition. In its 1993-4 hearing in the Mono Lake Cases, the State Water Board was charged to determine the flows which would “...reestablish and maintain the fisheries which existed in [the tributaries] prior to [Los Angeles’] diversion of water”²¹ in 1941.

7. As issued by the National Marine Fisheries Service (NMFS) under the Endangered Species Act section 7(a)(2),²² a 2009 Biological Opinion assures that the continued coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP) will not jeopardize the continued existence of various threatened and endangered species, including Sacramento River winter-run Chinook, Central Valley spring-run Chinook, Central Valley steelhead, green sturgeon, and Southern resident killer whales.²³ Another Biological Opinion issued by the Fish and Wildlife Service (FWS) provides the same level of protection for the Delta smelt as against harm caused by the coordinated operations.²⁴ These Biological Opinions do not reach other diversions and facilities which affect Delta flows. Further, their purpose is prevention of jeopardy of these species, rather than conservation of these species and trust resources in good condition as provided by the Fish and Game Code and public trust doctrine. Accordingly, the terms and conditions of the Biological Opinions are minimums on which the flow criteria required by the Delta Reform Act may be built.

8. The Delta Reform Act specifically requires the State Water Board to “review existing water quality objectives” in developing flow criteria.²⁵ Adopted under the Porter-Cologne Act²⁶ and Clean Water Act section 303(c)(1)²⁷ to “ensure the

reasonable protection of beneficial uses and the prevention of nuisance,”²⁸ these objectives include: Delta Outflow, River Flows, Export Limits, and salinity limits.²⁹

9. The 2006 Bay-Delta Water Quality Plan states existing objectives applicable to all water rights in Delta waters.³⁰ As provided in Decision 1641 (2000), these objectives are implemented by certain entities -- DWR and Reclamation, in their coordinated operations of the SWP and the CVP.³¹ The flow criteria required by the Delta Reform Act are not limited to these facilities.

10. As stated in the Pre-Proceeding Notice, the State Water Board here focuses on Delta outflows, taking into account the source of those flows.³² The criteria in this report are organized by existing beneficial uses and objectives, so as to provide context for the criteria. We note, however, that the criteria stated in this report are informational and do not have the status or effect of water quality objectives.³³

11. The 2006 Bay-Delta Water Quality Plan found:

“...unlike water quality objectives for parameters such as dissolved oxygen, temperature, and toxic chemicals, which have threshold levels beyond which adverse impacts to the beneficial uses occur, there were no defined threshold conditions that could be used to set objectives for flows and project operations. Instead, available information indicated that a continuum of protection existed. Based on that information, higher flows and lower exports provided greater protection for the bulk of estuarine resources up to the limit of unimpaired conditions. Therefore, these objectives were set based on the subjective determination of the reasonable needs of all the consumptive and nonconsumptive demands on the waters of the Estuary.”³⁴

12. The record of this proceeding confirms that higher Delta outflows than existing water quality objectives require, up to the limit of historical flows, will tend to provide greater protection for anadromous fish, pelagic fish, and other trust uses.³⁵ The nexus between flow, habitat, and species condition is inherently probabilistic: a controlled experiment of cause-and-effect is not possible in this ecosystem to test the relative significance of the multiple stressors (including flow) that affect the resources.³⁶ That said, the record does not demonstrate that higher flows today are surplus to the needs of these fisheries and their habitats, although it does demonstrate that the loss of meandering channels and wetlands in the Delta has reduced the ecological benefits of higher flows.³⁷

13. The record demonstrates that stressors other than flow regulation, such as predation by exotic species, contribute substantially to the existing condition of trust fisheries.³⁸ Habitat restoration and other measures to manage these stressors will increase the benefits of any flows.³⁹

14. Under the Water Code,⁴⁰ as well as Fish and Game Code and the public trust doctrine,⁴¹ a diverter may be required to undertake a physical solution in concert with flow releases to restore a trust fishery to good condition. Indeed, in the Mono Lake Cases, Los Angeles faced a choice how best to restore the trout habitat of tributary creeks degraded by decades of excessive diversion and the resulting loss of riparian vegetation. The Court of Appeal permitted, and the State Water Board later ordered, a systematic restoration program⁴² (including re-planting of riparian vegetation) which complements the flow release and diversion schedules.

“There is no reason to suppose that cessation of diversion, i.e., a return to the natural situation, would not of itself restore the creeks and their fisheries. However, this would probably constitute a waste of water. Hence, the appropriator can be compelled as the price of continued appropriation to take reasonable steps to attain the same end in a manner that does not involve unreasonable use of water.”⁴³

15. The Delta Reform Act does not require or prohibit non-flow criteria to complement the flow criteria specified in Water Code section 85086(c)(1). Consistent with case law and administrative precedent, this report includes physical solutions, such as modification of weirs and levees to restore floodplain habitat, to enhance the benefits of higher flows. It also includes adaptive management for the same reason.⁴⁴

16. Unlike the objectives in the 2006 Bay-Delta Water Quality Plan, the criteria stated in this report do not reflect a balance or accommodation between trust uses and the public interest in reliable water supply. The Board did not consider here the feasibility, cost-effectiveness, or other social or economic impacts of flows consistent with these criteria,⁴⁵ or the relative benefits of alternative uses of water.⁴⁶ The Plan of Implementation describes how the Board, in coordination with other agencies, will use these criteria for the purpose of further water right, permit, and water quality proceedings.

[PROPOSED] FLOW CRITERIA

Beneficial Uses

17. The 2006 Bay-Delta Water Quality Plan includes several beneficial uses that are trust uses of Delta waters. These are: Water Freshwater Habitat; Cold Freshwater Habitat; Migration of Aquatic Organisms; Spawning, Reproduction and/or Early Development; Estuarine Habitat; Wildlife Habitat; and Rare, Threatened or Endangered Species.⁴⁷

18. To attain these beneficial uses, trust fisheries should: have abundant populations, reproduce successfully under variable hydrologic conditions, be distributed widely in suitable habitats throughout the Delta, and be diverse both in genetic structure and life histories.⁴⁸ The criteria stated below are intended to sustain trust fisheries in this manner.

19. As in the 2006 Bay-Delta Water Quality Plan, the flow criteria stated in this report address trust fishes as communities, rather than individually.

Delta Outflow

20. The 2006 Bay-Delta Water Quality Plan includes a Delta outflow objective.⁴⁹ This report states additional such criteria in paragraphs 21 - 24.

21. For the period January-March, Delta outflows should exceed 2.5 million acre-feet (MAF) in 95% of the years, 6.3 MAF in at least 60% of years, and 10 MAF in 40% of years, so as to sustain longfin smelt, cragon shrimp, starry flounder, Sacramento splittail, striped bass, eurytemora affinis, and American shad.⁵⁰

22. For the period March –May, Delta outflows should exceed 2.5 MAF in a least 87.5% of the years, 6.3 MAF in 50% of the years, 10 MAF in at least 25% of years, to attain the ecological objective stated in paragraph 21.⁵¹

23. For the month of June, Delta outflows should exceed .25 MAF in at least 75% of the years, .5 MAF in at least 50% of years, and 1.2 MAF in at least 25% of years, to attain the ecological objective stated in paragraph 21.⁵²

24. Totaling the flow requirements stated in paragraphs 21 - 23 for the period of January – June, Delta outflows should exceed 3.2 MAF in at least 95% of the years, 6.3 MAF in at least 80% of the years, 13.5 MAF in 50% of the years, and 20 MAF in at least 33% of the years, to attain the ecological objective stated in paragraph 21.⁵³

Outflows Related to Salinity

25. The 2006 Bay-Delta Water Quality Plan states a salinity objective, known as X₂, that functions as an outflow objective for the period February – June.⁵⁴ This report states additional criteria in paragraph 26 and Table 1.

26. In addition, the average monthly X₂ values should be achieved during the period of September – November, as stated in Table 1, to sustain Delta smelt and disfavor exotics such as Corbula clams and *Mycrocystis* blooms.

Table 1. X₂ Values and Outflows for the Period September – November.⁵⁵

Frequency	X₂	Delta outflow
100% of years (all years)	<83 km	~5750 cfs
80% (dry years)	<80 km	~7500 cfs
60% (below normal years)	<77 km	~9700 cfs
40% (above normal years)	<74 km	~12,400 cfs
20% (wet years)	<71 km	~16,100 cfs

San Joaquin River Flows

27. The 2006 Bay-Delta Water Quality Plan states a flow objective for the San Joaquin River at Vernalis.⁵⁶ This report states additional criteria in paragraphs 28 – 31 and Table 2.

28. In addition, during the period March 15 – May 31, flows at Vernalis should exceed 5,000 cubic feet per second (cfs) 60% of the years, and should extend to June 15 in the wettest 20% of years, to maintain water temperature at or below 65 degrees F for the benefit of salmon rearing habitat and smolt out-migration. In the dry (20-40 percentile) and critical years (20-29 percentile), the duration of such flows may be reduced by 15 to 30 days respectively.⁵⁷

29. During the same period, flows of 20,000 cfs should occur to inundate the floodplain between Vernalis and Mossdale, and otherwise maintain complex and dynamic habitat at the channel margins, so as to provide habitat and water temperature benefits for Chinook salmon, steelhead, and other native species.⁵⁸

30. Table 2 states the minimum volume of flows to meet the criteria stated in paragraphs 28 - 29. Flows less than 20,000 cfs may provide sufficient inundated floodplain habitat if implemented in combination with habitat restoration and changes in channel configuration, including levee set-back or removal.

Table 2. San Joaquin Flows for Temperature and Floodplain Inundation for the Period March 15- June 15. ⁵⁹ *All flow values are stated in cfs.*

Days	March		April		May		June		% Unimpaired March 15 – June 15
90	3,000	5,000	20,000	20,000	20,000	7,000	7,000	2,000	33%
75	3,000	5,000	20,000	20,000	7,000	7,000	2,000	2,000	34%
60	3,000	5,000	20,000	10,000	7,000	5,000	2,000	2,000	36%
45	3,000	4,000	5,000	10,000	7,000	5,000	2,000	2,000	39%
31	3,000	4,000	5,000	5,000	5,000	2,000	2,000	2,000	43%

31. During the period March - May, flows of approximately 10,000 cfs should occur at Vernalis, for a duration of 5 days or longer. There should be at least 2 such events in dry years, and more in wetter years, so as to aid the outmigration of juvenile salmonids by increasing flow velocities and turbidity.⁶⁰

Sacramento River Flows

32. The 2006 Bay-Delta Water Quality Plan states a flow objective for the Sacramento River at Rio Vista.⁶¹ This report states additional criteria in paragraphs 33 – 35 and Table 3.

33. Flows at Verona should inundate the Yolo Bypass during the period December – May for a duration of 2 to 6 weeks (depending upon year type) to benefit rearing of winter-run Chinook salmon and Sacramento splittail, as well as spawning of splittail, once Fremont Weir is modified as provided in paragraph 37.⁶²

Table 3. Flows at Verona for Seasonal Inundation of Yolo Bypass.⁶³

	Dec.	Jan.	Feb.	March	April	May	Average cfs	Days	MAF
<i>Inundation Target Window</i>									
Wet (80 – 100 percentile)							35,000	120	8.3
Normal wet (60 – 80 percentile)							32,500	90	5.8
Normal dry (40 – 60 percentile)							30,000	60	3.6
Dry (20 - 40 percentile)							27,500	30	1.6
Critical (0 – 20 percentile)							27,500	15	0.8

Table 2 summarizes recommended timing, magnitude, and duration of inundation for the Yolo Bypass. While the table states the duration target for each year type, the actual timing of inundation should vary across the target window depending on actual hydrology. The grey and black shading represent the inundation target window, with the darkest shades representing optimum for foodweb productivity. The yellow shading by year type represents an idealized inundation period. Inter-annual variation in timing of duration will benefit a variety of species and maintaining life-history diversity.

34. During the period December through May, pulse flows of 15,000 cfs at Wilkins Slough, and up to 20,000 at Freeport, should occur for a duration of 7 days or longer. There should be at least 5 such events in dry years, and more in wetter years.⁶⁴ Such events in December and January will aid the migration of winter-run Chinook salmon; and in later months, the migration of spring and fall-run Chinook salmon.

35. During November through May, pulse flows at Bend Bridge should continuously exceed 8,000 cfs, and should periodically exceed 12,000, for a duration exceeding two weeks, so as to interconnect side channels with the main channel.⁶⁵ These peak flows will contribute to foodweb productivity and rearing habitat for salmon.

Habitat Restoration and Management of Other Stressors

36. The 2006 Bay-Delta Water Quality Plan does not include any objectives that require habitat modifications or other physical solutions to enhance the ecological benefits of flows. This report provides for the additional criteria stated in paragraphs 37 - 39.

37. Subject to environmental review and permitting as described in paragraph 42, Fremont Weir should be notched to allow flow discharge into the Yolo Bypass to establish and maintain fish habitat below the weir. The weir should be capable of spilling 3,000 – 6,000 cfs, in the period and duration specified in paragraph 33 and Table 3.⁶⁶

38. Suitable channel habitat for all life stages of native fishes, including seasonal habitat in floodplains, should be systematically restored in dispersed locations throughout the Delta.⁶⁷

39. Other stressors, such as predation by exotic fishes, should be systematically managed to avoid or reduce the significance of their impacts on native fishes and other trust resources.⁶⁸

Adaptive Management and Accountability for Environmental Performance

40. The 2006 Bay-Delta Water Quality Plan does not include measurable objectives for the performance of its flow objectives. This report adopts additional criteria as stated in paragraph 41.

41. Flows, habitat restoration, and measures to address other stressors should be managed adaptively.⁶⁹ All such measures should include:

- A. Measurable objectives that describe the expected results of implementation of the measures;
- B. Monitoring methods to track changes from the baseline conditions against such objectives; and
- C. Provisions for adaptation in the measures, up to specified limits, on the basis of the monitoring results.

[PROPOSED] PLAN OF IMPLEMENTATION

42. As a responsible agency, the State Water Board will cooperate with DWR and California Department of Fish and Game in the preparation of the Environmental Impact Report (EIR) for the Bay Delta Conservation Plan (BDCP), which is intended to provide long-term authorizations for the coordinated operations of the CVP and SWP.⁷⁰ Specifically, the State Water Board will assure that the EIR evaluates:

- A. A reasonable range of alternatives to the export limitations stated in the 2006 Bay-Delta Water Quality Plan;⁷¹
- B. A reasonable range of alternatives to the flow objectives stated in the 2006 Bay-Delta Water Quality Plan;
- C. A reasonable range of alternatives to avoid or minimize adverse impacts of higher flows (than required by the existing flow objectives) on reservoir storage, reliability of water supply, and the economy;
- D. Modifications in existing conveyance or operations, including an isolated Old River corridor, to reduce or eliminate reverse flows in the South Delta at all times, but particularly between December and June; and
- E. A reasonable range of alternatives to restore suitable habitat and manage other stressors for native fishes throughout the Delta, as part of

an integrated strategy for conservation of such trust uses. Among other things, the EIR will consider modifications to Fremont Weir as described in paragraphs 33 and 37, including measures to reconcile habitat restoration and agricultural and other economic uses of the lands in the Yolo Bypass.

43. The State Water Board will undertake to conclude the periodic review of the 2006 Bay-Delta Water Quality Plan, and take its final action on the BDCP, in 2012.

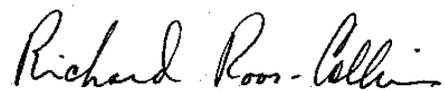
44. In 2011 the State Water Board will initiate, and by 2020 will conclude, proceedings to assure that all water rights tributary to the Delta contribute appropriately to the achievement of applicable flow objectives and other requirements for conservation of native fishes and other trust uses. Among other things, each water right will be required to demonstrate compliance with applicable requirements of Fish and Game Code sections 5900 – 6100 for screening of diversions, fish passage, and avoidance of pollution.⁷² Participants in this proceeding, as well as other interested stakeholders, will be invited to propose efficient and collaborative procedures for the conduct and conclusion of such proceedings, by December 31, 2010.

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Respectfully submitted,

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ENDNOTES

1 Water Code § 85086(c)(1).

2 *Id.*

3 *Id.*

4 Water Code § 85086(c)(1); “Notice of Public Informational Proceeding and Pre-Proceeding Conference” (Dec. 16, 2009), pp. 1-2.

5 Water Code § 85086(c)(1).

6 *National Audubon Society v. Superior Court*, 33 Cal.3d 419, 447 (1983) (*Audubon*).

7 *Id.* at 436-437.

8 *Id.* at 434-5.

9 *Id.* at 452.

10 *Id.* at 446.

11 *Id.* at 445.

12 *Id.* at 446.

13 DOI-1, pp. 2-5, NMFS-3, *passim*; TBI-1, pp. 2-6.

14 *Id.*

15 *Id.*

16 *Id.*

17 As enacted in 1957. Predecessors include: Fish and Game Code section 525 (1933) and Penal Code section 637 (1891). See West’s Annotated Codes (1984), Historical Note; *California Trout v. State Water Resources Control Board*, 207 Cal.App.3d 585, 604 n. 9 (*CalTrout I*).

¹⁸ Water Code §§ 1257, 1257.5 (water rights), 1258 (integration of water rights and water quality administration), and 13050(f) (water quality). Since at least 1957, the State Water Board has included a standard term requiring the release of flow for this purpose. See Decision 869 (1957); see S. Slater, *California Water Law and Policy* (2003), p. 13-38.2.

¹⁹ Fish and Game Code § 5937.

²⁰ Fish and Game Code § 45; *CalTrout I*, 207 Cal.App.3d at 605 n. 11.

²¹ *California Trout v. Superior Court of Sacramento County*, 218 Cal.App.3d 187, 194 (1990) (*CalTrout II*).

²² 16 U.S.C. § 1536(a)(2).

²³ NMFS, “Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project” (June 2009).

²⁴ FWS, “Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project and State Water Project” (2009).

²⁵ Water Code § 85086(c)(1).

²⁶ Water Code §§ 13000 *et seq.*

²⁷ 33 U.S.C. § 1313(c)(1).

²⁸ SWRCB, *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (2006), p. 10, *citing* Water Code § 13241.

²⁹ 2006 Bay-Delta Water Quality Plan, Table 3, p. 15 and Table 4, p. 21.

³⁰ *U.S. v. State Water Resources Control Board*, 182 Cal.App.3d 82 (1986) (*Racanelli*).

³¹ SWRCB, Decision 1641 (March 2000), p. 5.

³² SWRCB, “Notice of Public Informational Proceeding and Pre-Proceeding Conference” (Dec. 16, 2009), pp. 5, 7.

- ³³ Pre-Proceeding Notice, p. 7.
- ³⁴ 2006 Bay-Delta Water Quality Plan, p. 11.
- ³⁵ DOI-I, pp. 4-5; TBI-1, pp. 13-16; TBI-2, pp. 2-37; DFG-1, pp. 1-26; IFC-2, pp. 8-15.
- ³⁶ TBI-4, pp. 2-3.; DWR-0 (Written Summary), pp. 9-13; NMFS-0 (Written Summary), pp. 2-3; TNC-1, p. 3; UCD-2, pp. 4-17. Note: this is the exhibit number that we assign to UC Davis Delta Solutions Group’s paper, “On Developing Prescriptions for Freshwater Flows to Sustain Desirable Fishes in the Sacramento-San Joaquin Delta” (2010).
- ³⁷ UCD-2, pp. 5-8; TBI-1, pp. 13-16, 29-30; IFC-2, pp. 8-15; EDF-1, pp. 6-7.
- ³⁸ DOI-1, pp. 39-40; DWR-0 (Written Summary), pp. 4-5; San Luis Delta & Mendota Water Authority (SLDMWA)-1, pp. 8-9, *passim*; EDF-1, pp. 24-27; NMFS-6, pp. 2-3.
- ³⁹ AR-1, pp. 28-38; DFG-1, pp. 13-14; UCD-3, pp. 1-13. Note: UCD-3 is the exhibit number we give to UC Davis Delta Solutions Center’s “Ecosystem Improvements for the Sacramento-San Joaquin Delta: Development of a Portfolio Framework” (2010).
- ⁴⁰ See H. Dunning, “The Physical Solution in Western Water Law,” 57 U. Colo. L. Rev. 445 (1986).
- ⁴¹ *Cal Trout II*, 218 Cal.App.3d at 210 n. 6.
- ⁴² See WR Orders 98-05, 98-07.
- ⁴³ *Cal Trout II*, 218 Cal.App.3d at 210 n. 6.
- ⁴⁴ For example, the restoration plan approved in the Mono Lake Cases includes adaptive management to achieve stated objectives for restoration of the tributary creeks and Mono Lake itself. See WR Orders 98-05 and 98-07.
- ⁴⁵ Many participants submitted evidence regarding impacts of higher flow releases on reservoir storage, water supply, levee stability, and other variables. See, e.g., SVWU-4 – 55, *passim*. The State Water Board will consider this evidence,

which is relevant to its beneficial use determinations, in the subsequent proceedings described in the Plan of Implementation.

- 46 Water Code § 1257.
- 47 2006 Bay-Delta Water Quality Plan, p. 9.
- 48 TBI-1, pp. 13-21.
- 49 2006 Bay-Delta Water Quality Plan, Table 3, p. 15.
- 50 TBI-2, pp. 2-16.
- 51 TBI-2, pp. 2-16.
- 52 TBI-2, pp. 2-16.
- 53 TBI-2, pp. 2-16.
- 54 2006 Bay-Delta Water Quality Plan, Table 4, p. 21.
- 55 TBI-2, Table 1, p. 35.
- 56 2006 Bay-Delta Water Quality Plan, Table 3, p. 15.
- 57 AR-1, Figure 13, pp. 35-36 and TBI-3, Figure 10, p. 23.
- 58 AR-1, Table 5, p. 37.
- 59 AR-1, pp. 35-37.
- 60 AR-1, pg. 38.
- 61 2006 Bay-Delta Water Quality Plan, Table 3, p. 15.
- 62 AR-1, pp. 29-32.
- 63 AR-1, pp. 29-32.
- 64 AR-1, Figure 12, pp. 32-34.

65 AR-1, pp. 27-28.

66 AR-1, Figure 11, pp. 29-32.

67 *See* n. 39.

68 *See* n. 38.

69 AR-1, Figure 11, pp. 38-40.

70 *See* Water Code § 85320(b).

71 2006 Bay-Delta Water Quality Plan, Table 3, p. 15.

72 *See* Richard Roos-Collins and Brian Johnson, “Administrative Orders under Fish and Game Code sections 5900 – 6100” (July 23, 2009), *available* at http://www.n-h-i.org/uploads/tx_rtgfiles/2009-07-21_FGC_5900-6100_NHI_TU_.pdf.